

## CLAIMS

What is claimed:

1        1. A thermal imaging system intended for use upon a helmet worn  
2        by a person observing a scene at a fire or other incident site, comprising:  
3        infrared camera means assembled and releasably mounted along the  
4        centerline of the helmet for producing video signals reflective of  
5        thermal images of the scene viewed along the centerline;  
6        eyepiece display means extended from said infrared camera means and  
7        adjustably connected thereto for presenting thermal images of the  
8        scene to either eye of the person based on the video signals from said  
9        infrared camera means; and  
10       bracket means releasably engaged and coupled between said infrared camera  
11       means and the helmet for mounting said infrared camera means along  
12       the centerline of the helmet.

1        2. A thermal imaging system according to Claim 1, wherein said  
2        infrared camera means comprises:  
3        an infrared camera having a sensor array forwardly positioned to detect  
4        infrared radiation emanating from the scene for producing electrical  
5        signals indicative thereof;  
6        signal processor means connected to receive the electrical signals from said  
7        infrared camera for generating processed video signals based thereon  
8        indicative of thermal images of the scene; and  
9        battery means connected to said infrared camera and said signal processor  
10       means for providing electrical power thereto.

1           3. A thermal imaging system according to Claim 2, wherein said  
2 infrared camera means further comprises:  
3           housing means for containing said infrared camera, said signal processor  
4           means and said battery means in an assembled camera arrangement  
5           wherein the sensor array of said infrared camera is forwardly disposed  
6           to receive the infrared radiation emanating from the scene.

1           4. A thermal imaging system according to Claim 3, wherein said  
2 housing means comprises:  
3           a front housing member formed having a cavity to substantially contain the  
4           assembled camera arrangement therein and further formed having a  
5           portal centrally therethrough to permit transmission of the infrared  
6           radiation emanating from the scene to the sensor array of said infrared  
7           camera;  
8           a rear housing member connected to said front housing member and formed  
9           to enclose the cavity thereof, said rear housing member being further  
10           formed to provide an interior compartment to hold said battery means;  
11           and  
12           a battery door pivotally connected to said rear housing member to close the  
13           interior compartment therein.

1           5. A thermal imaging system according to Claim 3, wherein said  
2 eyepiece display means comprises:  
3           an eyepiece display electrically connected to receive the processed video  
4           signals from said signal processor means for producing thermal  
5           images therefrom; and  
6           an articulated arm connected to said housing means and adjustably  
7           configured to extend said eyepiece display therefrom in a position  
8           forward of either eye of the person.

1           6. A thermal imaging system according to Claim 3, wherein said  
2 bracket means comprises:  
3           a first bracket member attached to said housing means in an axial direction,  
4           said first bracket member being formed having an open rectangular  
5           configuration with a C-shaped cross-section;  
6           a second bracket member attached to the helmet in an axial direction and  
7           along the centerline of the helmet, said second bracket member being  
8           formed having a rectangular configuration conformed to fit axially  
9           within the open rectangular configuration of said first bracket  
10           member; and  
11           detent means secured to said second bracket member and transversely  
12           disposed thereon to releasably interlock said first and second bracket  
13           members when axially engaged.

1           7. A thermal imaging camera system for use upon a helmet having  
2 a brim and worn by a person observing a scene at a fire or other incident site,  
3 comprising:

4           infrared camera means assembled and adapted to be mounted upon the brim  
5 of the helmet, said infrared camera means being disposed to view the  
6 scene along the centerline of the helmet for generating processed  
7 video signals reflective of thermal images of the scene;

8           eyepiece display means electrically connected to said infrared camera means  
9 and flexibly extended therefrom for displaying thermal images of the  
10 scene to either eye of the person based on the video signals generated  
11 from said infrared camera means; and

12           bracket means interconnected between said infrared camera means and the  
13 brim of the helmet for releasably mounting said infrared camera  
14 means along the centerline of the helmet.

1           8. A thermal imaging camera system according to Claim 7,  
2 wherein said infrared camera means comprises:

3           an infrared camera having a sensor array forwardly positioned to detect  
4 infrared radiation emanating from the scene for producing electrical  
5 signals indicative thereof;

6           signal processor means connected to receive the electrical signals from said  
7 infrared camera for generating processed video signals based thereon  
8 indicative of thermal images of the scene; and

9           battery means connected to said infrared camera and said signal processor  
10 means for providing electrical power thereto.

1           9. A thermal imaging camera system according to Claim 8,  
2 wherein said infrared camera means further comprises:  
3        housing means for containing said infrared camera, said signal processor  
4        means and said battery means in an assembled camera arrangement  
5        wherein the sensor array of said infrared camera is forwardly disposed  
6        to receive the infrared radiation emanating from the scene.

1           10. A thermal imaging camera system according to Claim 9,  
2 wherein said housing means comprises:  
3        a front housing member formed having a cavity to substantially contain the  
4        assembled camera arrangement therein and further formed having a  
5        portal centrally therethrough to permit transmission of the infrared  
6        radiation emanating from the scene to the sensor array of said infrared  
7        camera;  
8        a rear housing member connected to said front housing member and formed  
9        to enclose the cavity thereof, said rear housing member being further  
10      formed to provide an interior compartment to hold said battery means;  
11      and  
12      a battery door pivotally connected to said rear housing member to close the  
13      interior compartment therein.

1           11. A thermal imaging camera system according to Claim 9,  
2       wherein said eyepiece display means comprises:  
3       an eyepiece display electrically connected to receive the processed video  
4       signals from said signal processor means for producing thermal  
5       images therefrom; and  
6       an articulated arm connected to said housing means and adjustably  
7       configured to extend said eyepiece display therefrom in a position  
8       forward of either eye of the person.

1           12. A thermal imaging camera system according to Claim 9,  
2       wherein said bracket means comprises:  
3       a first bracket member attached to said housing means in an axial direction,  
4       said first bracket member being formed having an open rectangular  
5       configuration with a C-shaped cross-section;  
6       a second bracket member attached to the brim of the helmet in an axial  
7       direction and along the centerline thereof, said second bracket member  
8       being formed having a rectangular configuration conformed to fit  
9       axially within the open rectangular configuration of said first bracket  
10      member; and  
11      detent means secured to said second bracket member and transversely  
12      disposed thereon to releasably interlock said first and second bracket  
13      members when axially engaged.